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ALASKA FOREST RESEARCH CENTER

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JUNEAU, ALASKA

Seed Dispersal in Southeast Alaska

A bumper cone crop in 1951 produced 91 pounds of seed per acre in a typical climax pulp timber stand[1/] in the Juneau area of the Tongass National Forest.

The hemlock seed crop of nearly 86 pounds per acre was disseminated over a period of 15 months. The spruce seed crop, totalling slightly over 5 pounds per acre, was disseminated over a period of 14 months. The amount and periodicity of seed release was closely associated with the amount of atmospheric moisture. A large percentage of the seeds falling at the end of the period germinated in the traps because of favorable temperatures and moisture conditions. In the latter part of the dissemination period, alternate wetting and drying of the cones appeared to loosen the seed and help open the basal scales of the cone. The 1952 seed crop was a failure in this area. Color of seed and immediate germination of much of it indicated the 1951 origin of this late-falling seed.

Sixteen seed traps, each 2' X 3', were equally spaced over an acre within the stand for determining the amount and period of seed dissemination. Weekly observations were made until January 4, 1952; then at irregular intervals until February 5, 1953. Seed dispersal began during the week of September 21-28, about two weeks after the seed ripened.

Nearly 78 percent of the spruce and 59 percent of the hemlock seed was released in October. The greatest weekly dispersal occurred during the dry, windy week of October 12-19. Seventy-two percent of the spruce and 54 percent of the hemlock, 3.7 pounds and 46.1 pounds respectively, fell during this week. The next greatest weekly dispersal occurred between December 14-22 with 3.5 percent of the spruce and 14.5 percent of the hemlock, or .17 pounds and 12.47 pounds respectively. Spruce was released in relatively even proportions from November through April. A heavy fall of hemlock seed occurred in December and during March and April, amounting to 22 percent and 11 percent respectively. The last seed from the 1951 crop fell in early November. Table 1 shows the seedfall by months for each species.

1/ Consisting of 86% western hemlock and 14% Sitka spruce by cubic volume.

Table 1.--Number of seeds disseminated per acre and cumulative percent by periods, September 1951 to November 1952.

Period	Sitka spruce			Western hemlock		
	# seeds	lbs.	Cumulative percent	# seeds	lbs.	Cumulative percent
September	36,000	.17	3.41	79,860	.27	.32
October	827,640	3.94	81.22	14,966,490	50.39	59.10
November	61,710	.29	87.02	1,444,740	4.86	64.77
December	65,340	.30	93.17	5,691,840	19.17	87.13
Jan.-Feb.	36,300	.17	96.58	435,600	1.46	88.84
Mar.-April	32,670	.16	99.66	2,729,760	9.19	99.58
May-Sept.	0	0	99.66	32,670	.11	99.70
October	3,630	.02	100.00	65,340	.22	99.95
November	0	0	100.00	14,520	.05	100.00

A similar trap layout in a 12-acre opening adjacent to the above area caught only 10 percent of the amount of seed that fell within the timber. However, the proportion of spruce was nearly 11 percent in the open as compared with 4 percent in the timber. The increase of spruce seedfall in the open is largely attributed to the wing shape of the spruce seed, which enabled it to be carried farther by the wind.

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